If you aren't counting down the number of days, I am sure you child is. We are completing the final practice today. We will review on May 14 and take the final test on May 15. This means your child should spend some time studying everyday, today and tomorrow. As a reminder the final test is extremely important. It not only measures the learning of this quarter, it is also 10% of your child's final grade. If your child scores higher than their current grade, it will increase their final grade to this score. Last quarter, some students did not spend the required amount of time studying and it negatively effected their grade. There should be no surprises on the final test. We will complete final unit after the final test. The chapter 13 test will be on May 22.

Chapter 13 introduces your child to several topics from the fields of probability and statistics.

When you have several groups of items and you select only one item from each group, the **Fundamental Counting Principle** allows you to multiply the number of items in each group to find the total number of selections. For example, if you have 5 shirts, 3 pants, and 4 jackets, you can create 60 outfits because $5 \bullet 3 \bullet 4 = 60$.

A **permutation** is a selection of items from one group in which order is important. A **combination** is a selection in which order is *not* important. Calculating permutations and combinations require the use of **factorial** (!), the product of the natural numbers less than or equal to the number.

Type	Formula	Example
Permutation	$_nP_r = \frac{n!}{(n-r)!}$	How many ways can seven swimmers finish in first, second, and third place? $_7P_3 = \frac{7!}{(7-3)!} = \frac{7!}{4!} = \frac{7 \cdot 6 \cdot 5 \cdot \cancel{4 \cdot 3 \cdot 2 \cdot 1}}{\cancel{4 \cdot 3 \cdot 2 \cdot 1}} = 210$
Combination	$_nC_r = \frac{n!}{r!(n-r)!}$	How many ways can seven coworkers be chosen for a committee of three? $_7C_3 = \frac{7!}{3!(7-3)!} = \frac{7!}{3!(4!)} = \frac{7 \cdot \cancel{6} \cdot 5 \cdot \cancel{4 \cdot 3 \cdot 2 \cdot 1}}{\cancel{4 \cdot 3 \cdot 2 \cdot 1}} = 35$

Probability is a measure of how likely an event is to occur. To find a **theoretical probability**, you assume all events are equally likely and calculate the ratio of the number of favorable outcomes to the number of all possible outcomes.

To find an **experimental probability**, you use real-world data and calculate the ratio of the number of times an event actually occurs to the number of trials of the experiment.

Probability	Formula	Example
Theoretical	$P(\text{event}) = \frac{\text{number of favorable outcomes}}{\text{number of all possible outcomes}}$	What is the theoretical probability of rolling a 3 on a number cube? $P(3) = \frac{1}{6}$
Experimental	$P(\text{event}) = \frac{\text{number of times the event occurs}}{\text{number of trials}}$	A number cube is rolled one-hundred times and comes up 3 forty times. What is the experimental probability? $P(3) = \frac{40}{100} = \frac{2}{5}$

Events can be **independent** (one event does *not* influence the other), **dependent** (one event *does* influence the other), **mutually exclusive** (the events *cannot* both occur during the same trial), or **inclusive** (the events *can* occur at the same time).

Situation	Formula	Example
Independent Events	$P(A \text{ and } B) = P(A) \cdot P(B)$	Find the probability of rolling a 3 on one number cube and a 3 on another number cube. $P(3 \text{ and } 3) = \frac{1}{6} \cdot \frac{1}{6} = \frac{1}{36}$
Dependent Events	$P(A \text{ and } B) = P(A) \cdot P(B \text{ given } A)$	Find the probability of drawing two aces from a deck of cards without replacement. $P(\text{A and A}) = \frac{4}{52} \cdot \frac{3}{51} = \frac{12}{2652}$
Mutually Exclusive Events	$P(A \text{ or } B) = P(A) + P(B)$	Find the probability of rolling a 3 or a 4 on one number cube. $P(3 \text{ or } 4) = \frac{1}{6} + \frac{1}{6} = \frac{2}{6}$
Inclusive Events	$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$	Find the probability of drawing an ace or a red card from a deck of cards. $P(\text{A or red}) = \frac{4}{52} + \frac{26}{52} - \frac{2}{52} = \frac{28}{52}$

Your child will learn that a two way table is a useful way to organize data that can be categorized by two variables.

Your child will construct and interpret tables that show the results of different surveys, including joint and marginal relative frequencies of the responses for the survey. These tables can be used to interpret the responses of the survey participants.

The following are the assignments and the assessments for this unit. As a reminder the actual dates when the assignments are assigned can be found on the assignment calendar on my school webpage. This can be found under classrooms on the high school webpage.

Are You Ready Chapter 13 Pretest.

13-1 Assignment (p 875) 10, 12, 14, 24, 26.

13-2 Assignment *(pp 883-884)* 14, 16, 18-20, 26, 31, 32, 33, 35.

13-3 Assignment

- *(pp 891-893)* 10-12, 15-18, 22, 24, 25, 28, 29, 31-34.
- Ready to Go On Lesson 13A

Chapter 13 Quiz 1

13-4 Assignment *(903-905) 8-15, 17-20.*

13-5 Assignment

- (pp 911-913) 12-15, 17, 19, 20, 22-24, 26, 30, 34, 35, 38
- Ready to Go On Lesson 13B

Chapter 13 Quiz 2

Chapter 13 Test